

## Article

# Facing the Energy Crunch (Energy Efficiency in Historic Buildings)

Parsons, Keith

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## Facing the Energy Crunch

The IHBC NW Day Conference, in Liverpool, was on the subject of Energy Efficiency in Historic Buildings.

Professor Kevin Anderson from Manchester University set the context for the day. He discussed the 2°C increase in temperature that the UK and EU defined as being the threshold between acceptable and dangerous climate change. Anderson believed that long term targets for reducing emissions by 2050 were pointless, because we needed to focus on the next 2 to 5 years: the longer we waited for emissions to peak the steeper the reductions would have to be to stay anywhere near the 2°C threshold.

Alan Gardner (a Chartered Building Surveyor and SPAB Lethaby Scholar) outlined the difference between modern construction and traditional construction and explained the concept of a 'breathing building' and how they performed. He described the problems that arose when modern technology was applied to traditional buildings.

What is an appropriate improvement? The approach should start with: lighting, heating boilers and controls and loft insulation. These interventions could be simple and relatively effective and they were not in conflict with old buildings. Gardner described various techniques that could help in understanding the thermal performance of individual traditional buildings.

Caroline Cattini (a Building Services Engineer from EH) talked about renewable energy and microgeneration. Cattini explained that energy saving measures, like low energy light bulbs and insulation, should come first. It was important to consider the impact (of renewables) on wildlife as well on the building. Cattini directed delegates to EH guidance material, at [www.climatechnageandyourhome.org.uk](http://www.climatechnageandyourhome.org.uk)

David McDonald, the Conservation and Design Team Leader at the Royal Borough of Kensington and Chelsea, provided a short guide to planning/development control. Due to recent or proposed changes in Planning regulations, the General Permitted Development Order (GDPO) and Building Regulations the subject was timely. The point of the presentation was to discuss whether alterations to improve thermal efficiency would need planning permission or not. The GDPO was amended in 2008 particularly in respect of provisions relating to domestic microgeneration equipment.

McDonald pointed out that internal alterations did not require planning permission and that although external alterations usually required permission, some alterations may be classed as permitted development, unless these rights had been removed by an Article 4 Directive. McDonald pointed out that most alterations to a listed building are likely to require Listed Building Consent, whether inside or out. He ended regulations by directing delegates to the Planning Portal guide, at [www.planningportal.gov.uk/uploads/hhg/houseguide.html](http://www.planningportal.gov.uk/uploads/hhg/houseguide.html)

The afternoon session began with three case study presentations. The first was given by Karen Heverin: the Conservation Officer for Oldham. She outlined the

pressure for change, by citing things like the use of the Reduced Data Standard Assessment Procedure (rdSAP) to rate the thermal performance of buildings.

Heverin took two buildings, compared their energy ratings with the current requirements in Part L and then described benign alterations and showed how the thermal performance could be improved. Even so, she conclude that there were practical difficulties in assessing u-values in older buildings and anomalies when using the rdSAP method, so improving energy efficiency in historic buildings was not just a technical issue.

Poppy Potter (an Environmental Development Worker) spoke about the National Communities Resource Centre (NCRC). The NCRC is based at Trafford Hall, which was built in 1756 and had an energy efficiency upgrade 2008/9. The aim is to be carbon neutral by 2012 and the NCRC has signed up to the 10:10 campaign (i.e., the NCRC wants to achieve a 10% reduction year on year). Potter explained how the energy efficiency of Trafford Hall had been improved by improving the building fabric and improving operations.

For the third case study James Sanderson (an architect) introduced the work of Purcell Miller Tritton (PMT). The practice sought to enable clients to sign up to the 10.10 campaign. Sanderson explained that PMT started from first principles of sustainable design and gave delegates a whistle-stop tour of some of PMT's projects and focussing on the sustainability aspects of the work.

Dr Nigel Blades (Preventive Conservation Adviser (Environment) at the National Trust) explained that the (NT's) Environmental Policy focused on energy aspects, reducing dependency on fossil fuels and meeting UK Government targets for reducing emissions and using renewable energy.

The mansion properties are mostly Grade I listed buildings with unique interiors and collections. On the one hand the NT was seeking to reduce heat loss and use energy efficient lighting in the buildings themselves, as well as improving the efficiency of the environmental controls (i.e., controlling temperature and relative humidity (RH)) for collections conservation). Although RH was controlled within a narrow range a wider range of temperatures was accepted, because the aim was to provide "conservation heating" rather than "comfort heating". In this way energy consumption could be reduced.

Also, it had been found that fitting standard roller blinds, closing the window shutters and fitting heavy lined curtains together improved the u-values to a similar level to that achieved by either secondary glazing or insulating the panels in the shutters. Loft insulation, was being installed too, e.g., hemp.

Finally, Mike Robinson (a structural engineer) talked about how lifestyles and expectations had changed. In the 'good old days' houses had one warm room, people wore 'appropriate clothing' and they were a bit 'tougher', whereas in the 20<sup>th</sup> century life had become 'softer'.

Robinson explored the notion of Existing Buildings Survival Strategies (EBSS), which he explained consisted of 5 stages, 3 levels of intervention and provided measures of effectiveness, energy performance, costs and the feelgood factor.

Robinson felt that there was an obvious need to act to control energy consumption, but we would have to consider our own attitude and expectations. There were a range of appropriate interventions; in some ways it was about good housekeeping, but we needed to develop more appropriate measures, through Planning and BREEAM etc.

In the question and answer slots one delegate talked about the fact that, despite the need for an 80% reduction, some people still did not think it applied to listed buildings. Alan Gardner agreed and said that it was not about 'quick wins', but rather about engaging in experimental work and following the lead of countries like Germany and Switzerland – looking at whole life energy, including: manufacture, transport, construction and building use.

It was suggested that the BRE needed to move further and to take account of the embodied energy of older buildings in BREEAM. There was consensus that using the rdSAP method was not accurate. The BRE needed to focus on targets and emission rates and improve the accuracy of the rdSAP method.

The day finished with a summary from the chair. Buildings are a consequence of people and how they live their lives. The question should be about increasing people's knowledge rather than going for a quick-fix. People needed to learn from each other and from the knowledge of practitioners.

Keith Parsons  
Principal Lecturer  
University of Central Lancashire